

REMARKS

Favorable reconsideration of this application, as presently amended and in light of the following discussion, is respectfully requested.

Claims 1, 4 and 6-8 are pending. Claims 5 and 9 were previously canceled without prejudice. Claims 2 and 3 have been presently canceled without prejudice. Claims 1 and 6 has been presently amended.

Claims 1 and 6 were objected to. Claims 1-2, 6 and 8 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Ochiai et al (U.S. Pat. No. 6,768,531) in view of Haim et al (U.S. Pat. No. 5,150,235). Claims 3 and 4 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Ochiai et al and Haim et al in view of Yanagawa et al ((U.S. Pat. Appl. Publ. No.2002/0113936)). Claim 7 was objected to for being dependent from a rejected base claim but would be allowable if rewritten in independent form to include the limitations of the base claim and any intervening claims.

The Advisory Action stated that:

Ochiai et al disclose in Figure 10 that a columnar spacer is disposed on the second color filter layer having a thickness greater than the first color filter layer for maintaining a cell gap, but Ochiai et al fail to disclose that the second color filter layer having the greater thickness passes a wavelength of light greater than the first color filter layer.

However, Haim et al disclose in Figure 1 that the thickness in descending order of the color filter layers are arranged as blue, green and red, such that the second color filter layer having a thickness greater than the first color filter layer passes a wavelength of light greater than that of the first color filter layer.

Therefore, it would have been obvious at the time the invention was made to form a columnar spacer on the thicker of the color filter layers for maintaining a predetermined cell gap such that the thicker of the color filters layers passes the greater wavelength of light as taught by Haim et al since Haim et al teach that by arranging the color filter thickness with respect to their respective wavelength transmission as shown in Figure 1 results in an increase in uniformity of optical radiation as a function of angle relative to the axis and that an increase in image contrast for off-axis observation can be achieved.

In response, in the present invention, the wavelength of a first light color, which passes through the first color filter layer, is greater than the wavelength of a second light color, which passes through the second color filter layer. The present invention has been clarified to define that the columnar spacer for creating the second gap is disposed on the second pixel, as illustrated in Applicants' Figure 3. If BLUE and GREEN are used for purposes of illustration, the present claims would define the first color filter to be GREEN (e.g., 480 nm) and the second color filter to be BLUE (e.g., 350 nm), and would further define that the columnar spacer is disposed on the BLUE pixel (the shorter wavelength filter), as illustrated in Applicants' Figure 3. Ochiai et al show in Figures 9 and 10 the support on a RED filter (the longer wavelength filter as compared to the adjoining BLUE or GREEN filters). Haim et al show no supports in their figures, and presumably have supports outside the pixel regions.

Furthermore, none of the references discloses that the columnar spacer is formed of a negative-type photosensitive resin material having light shield properties. If the columnar space is formed of such a material, an optical cross-linking reaction may not progress to a deep part of the resin material, and the columnar spacer may have a low support strength, as described in the specification, page 16, line 12 and page 17, line 12, etc. To address these problems, according to the present invention, the columnar spacer is disposed on the second pixel, which has a relatively small gap. Lastly, Applicant submits that none of the applied references describes the problem addressed by the present invention, nor this clarified feature of the present invention.

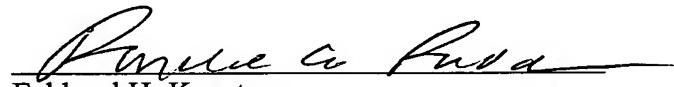
For these reasons, Applicant respectfully submits that Claim 1 and the claims dependent therefrom patentably define over Ochiai et al and Haim et al.

Finally, regarding the claim objection to Claims 1 and 6, Applicant submits that the present amendment addresses the objections to Claims 1 and 6. Hence, it is respectfully submitted that the objections to Claim 1 have been overcome.

Consequently, in view of the foregoing discussion and present amendment, it is respectfully submitted that this application is in condition for allowance. An early and favorable action is therefore respectfully requested.

Respectfully submitted,

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